AMATEUR RADIO

OCTOBER 1945

JOURNAL OF THE WIRELESS INSTITUTE OF AUSTRALIA

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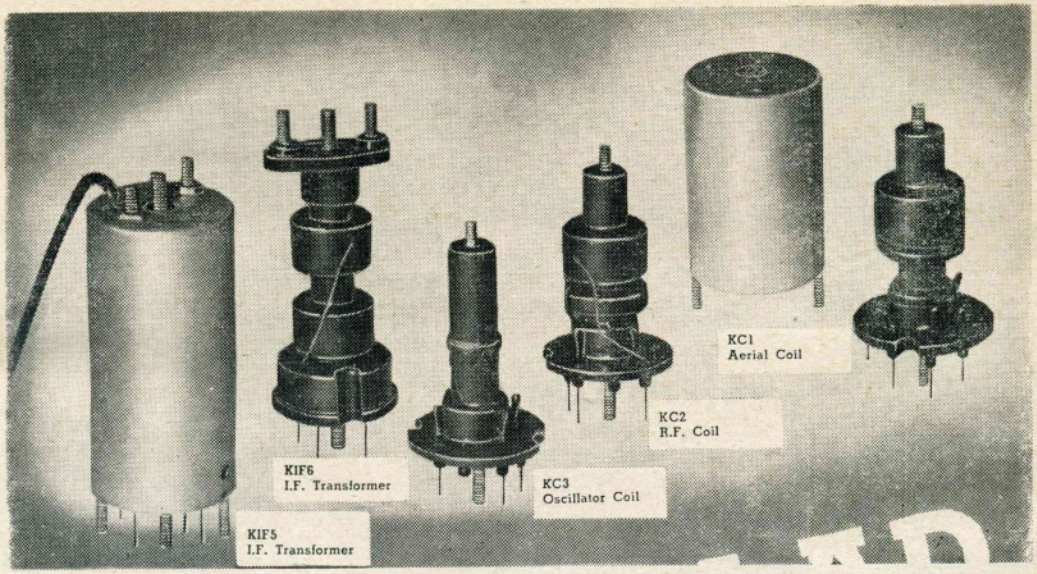

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EDITORIAL

Proudly do we, the Magazine Committee, present the first printed issue of "Amateur Radio" since January, 1941.

We trust that the new "A.R." meets with your full approval, for we have spent many months planning to return to print, but due to delays outside our control, it has not been possible to do so until now.

The duplicated magazine, we are sure, served a purpose—It was either a duplicated magazine or none at all, and the members of the Magazine Committee over the past four and a half years have felt that the time they put into preparing and printing the Magazine, did much to keep alive Ham Radio and the Wireless Institute of Australia during the darkest hour of its history.

It is fitting that this, the first issue to be printed in post war years should fall on the anniversary of the first issue of "Amateur Radio," for it was in October, 1933, that the Magazine made its appearance.

We feel that we should not let this opportunity pass without publicly expressing our appreciation of the high degree of co-operation we have received from our printers, Messrs. H. Hearne & Co. Pty. Ltd., and from our Advertising Representative, W. J. Lewis Advertising Service. Their advice and enthusiastic help has considerably lightened our burden.

To our advertisers also may we express our appreciation of their willingness to take space. We trust that our readers will take note of their advertisements and remember them when the time comes to build that new rig, receiver or other gear.

In conclusion, may we state that contributions from readers, both in the shape of notes, technical articles, or anything of interest to the Ham in general will be appreciated.

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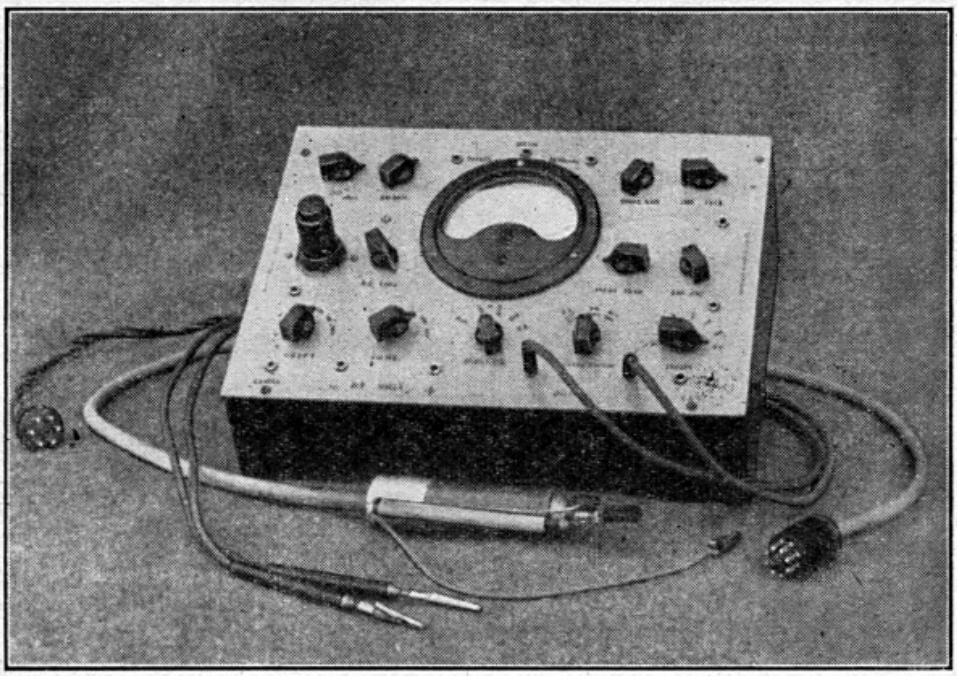
A COMBINATION INSTRUMENT

VACUUM TUBE VOLTMETER, OHMMETER, MEGGER, CAPACITY TESTER

By B. R. MANN, VK3BM*

Most Hams and Experimenters are at some time or other faced with the necessity of measuring voltages under conditions that will not tolerate the slightest loading. Mr. Bruce Mann has gone to considerable lengths to design, build and describe a Vacuum Tube Voltmeter that is well-nigh the ultimate for DC, AC and RF measurements. Add to this facilities for measuring accurately capacitors and resistors as well as an insulation tester and you have a gadget that should be in every Ham's shack.



A view of the complete instrument.

From time to time I have built up various VTVM's for special tests, but not one has been of general enough usefulness to escape being wrecked for its parts.

However, recent articles in "Amateur Radio," reawakened my interest, so I obtained a copy of "Rider—Vacuum Tube Voltmeters," and turned up everything on the subject in my library, McMurdo Silvers article in February, 1944, Radio, and C. B. De Soto's article in "Q.S.T." for December, 1941, were also very helpful.

Having thoroughly perused all the above information, I soon decided that the best type to build would be a balanced Push-Pull D.C. VTVM with a diode or triode probe for R.F. measurements.

An 0—1 ma meter with a 5 inch multiscale being on hand, I was determined that I would make a multirange VTVM that would accurately read to the D.C. meter scales, or else ——

Firstly I tried out McMurdo Silver's circuit. Not having a 6SN7GT as specified, I used a pair of 6J5GT's which have identical characteristics. However, the results were not too good. The grid current was so great that the pointer was a half inch up the scale, so that linearity was impossible unless the input resistance were drastically reduced or the lowest full scale voltage range was increased to 10 volts.

I then tried the "Q.S.T." circuit with only slightly better results.

Now, to reduce grid current trouble we are faced with the following alternatives:—

(1) Use lower voltages on tube elements.

(2) Use higher values of cathode resistances.

(3) Use tubes less prone to grid emission.

(4) Omit lower voltage ranges so that grid emission is not so noticeable in its effect on linearity.

(5) Use lower input resistance.

To cut a long story short, I experimented along all these lines and found that:—

(a) Of all tubes available, 41's used as triodes had the least grid emission;

(b) that 75,000 ohm cathode resistors would iron out any tube mismatches, and give perfectly linear scale;

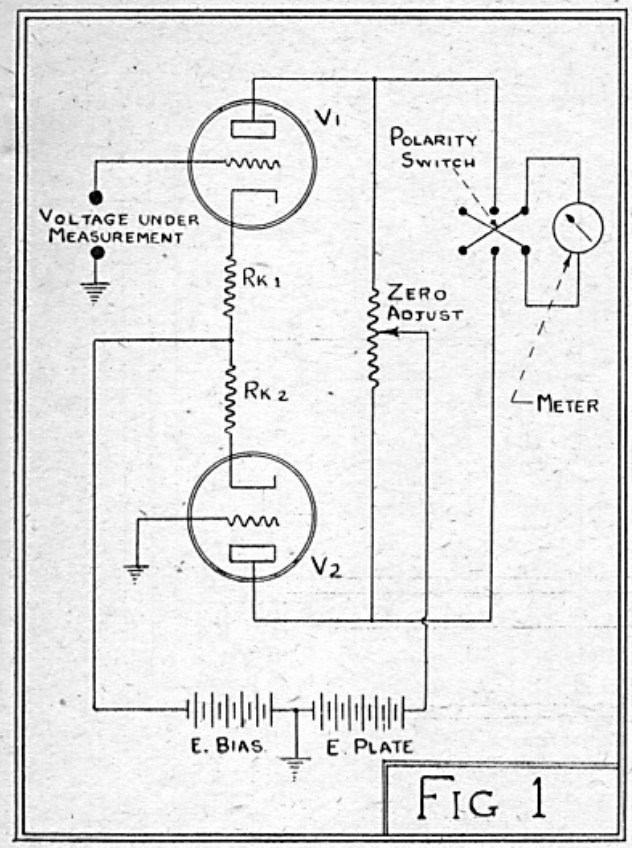
(c) that reducing the heater voltage lowered the grid current, but it was not safe to go too low

*"Morningquest," Quambatook, Victoria.

or line voltage changes would affect stability, 5.25—5.5 volts seemed to be O.K.

(d) that cathode resistors in excess of 50,000 ohms would either require 300 volts of B supply, or a micro ammeter;

(e) That the circuit in Fig. 1 was about the simplest and most effective basic circuit.



BASIC CIRCUIT OF BALANCED DEGENERATIVE V.T.V.M.

To qualify some of my statements above with my determination to use an 0—1 ma meter with a maximum of 300 volts B supply, and linearity at 4½ volts full scale (for ohm meter battery) I found that if I selected matched 41 tubes everything was O.K., and that grid current was negligible with 15 megohm input resistor. So the circuit was tried out with an input voltage divider and sundry other refinements. The 5 volt range is set with a 500 ohm resistance in series with the meter and all higher ranges are determined by the input voltage divider. An A.C. filter, comprising a 1 megohm resistor and an 0.002 mfd condenser is in the voltmeter triode grid to filter out any induced A.C. components. I haven't bothered to experiment with the tap on the voltage divider, except to find that it has some effect on linearity and seems to go best somewhat below the halfway mark. The cathode resistors should be matched.

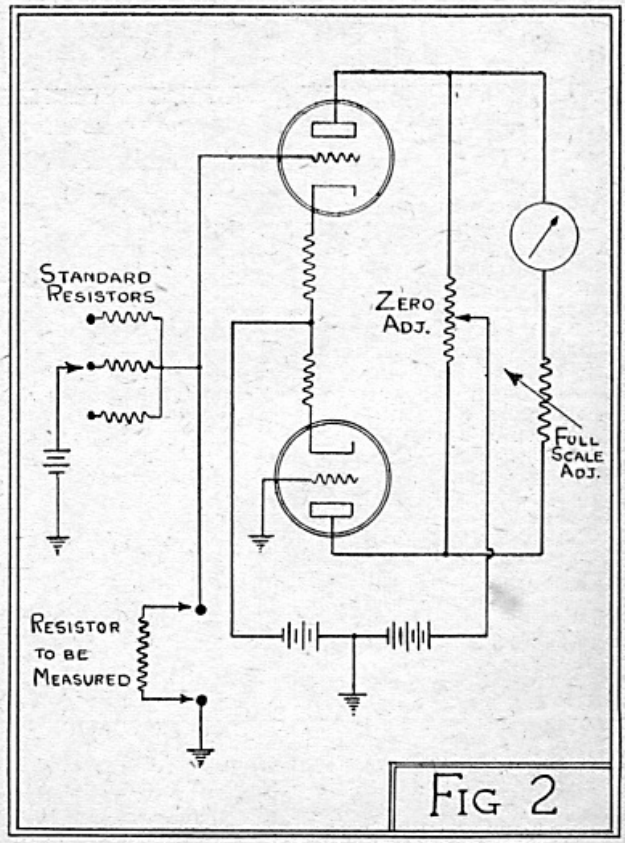
For measuring AC, AF and RF up to a few hundred KC, I have used a diode rectifier. A 6C5 plugs into the panel and its rectified output is filtered and applied across the input voltage divider of the DC VTVM. A separate calibration resistor is used so that the meter will read RMS, although the DC output is peak volts. (Please note here the calibration should be carried out with a sinusoidal AC voltage under which condition the RMS reading will be 0.707 of the peak voltage. If, however, a non-sinusoidal voltage is to be measured, the calibration cannot be taken as accurate, and will vary according to the complexity of the waveform. The calibration, if carried out at 50 cycles will hold good within a few per cent. up to several megacycles).

For the higher frequencies, a diode on a probe is used. See Fig. 5. I used a CB1, as it has the plate connection on the top, and is a convenient size and shape. The heater voltage was drastically reduced to reduce contact potential trouble. The probe cable is terminated in an octal plug which fits into the panel socket from which the 6C5 low frequency rectifier is removed. The connections are so arranged, so that whichever is plugged in has the correct heater voltage and other connections There are many substitutes for the 6C5 and CB1 which are used here.

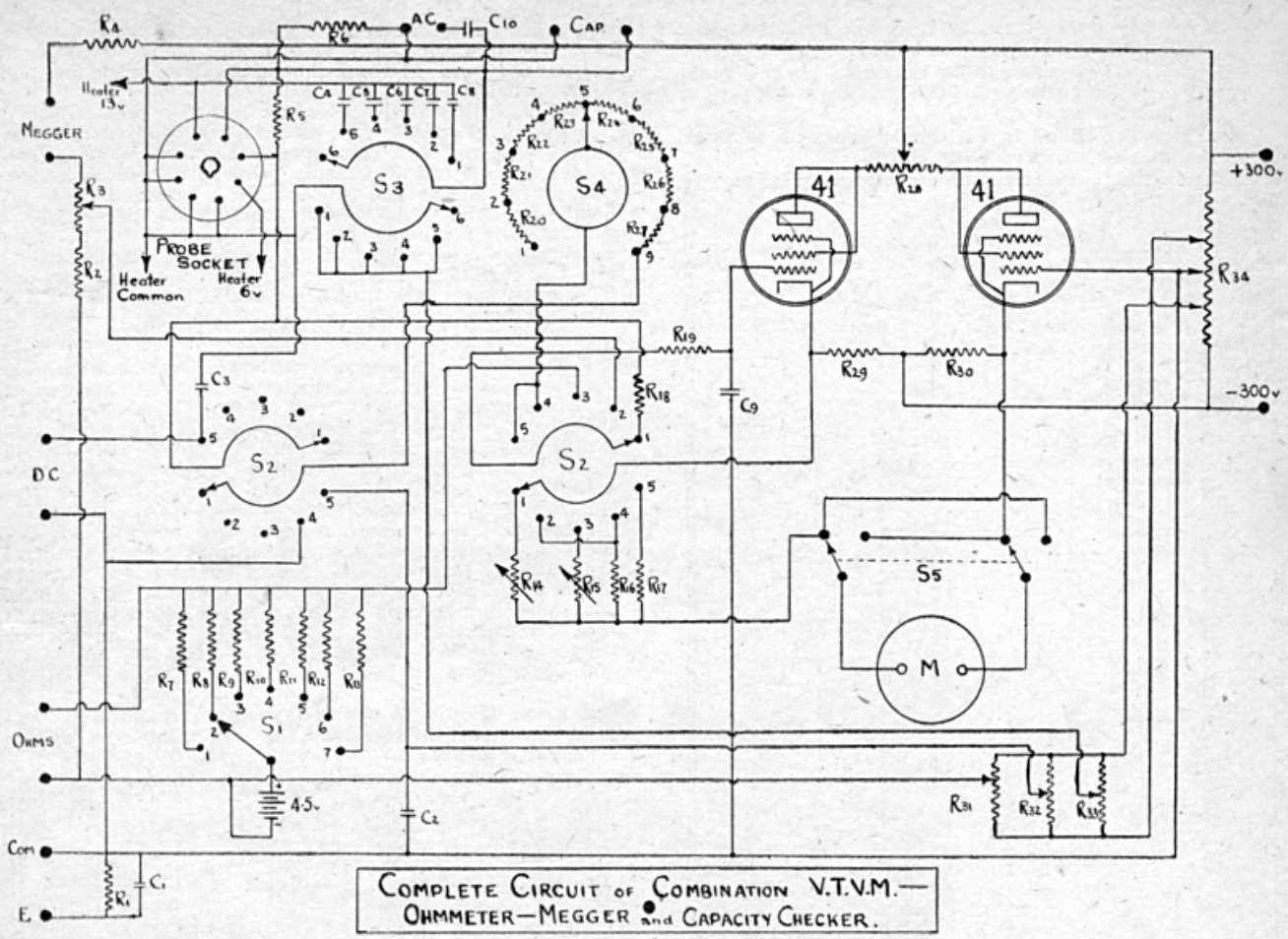
OHMMETER

A 4½ volt "C" battery is used and a 5000 ohm variable resistor in series with the meter to adjust to zero ohms with the prods shorted. A potentiometer is used across the appropriate portion of the voltage divider so that an initial bias is placed on the grid. As the ohms scale starts at the right of the meter, so we just reverse the meter, apply the bias and balance it against the battery, thus getting ohms readings on the printed ohms scale of the meter. The standard resistors must be properly related to the scale graduations. On my meter, the central figure of the ohms scale is 15, so I use standard resistors of 15, 150, 1500, 15,000, 150,000 and 15,000,000 ohms. The maximum reading on the scale is 1,000 ohms, so that the corresponding full scale readings of the various ranges are 1,000, 10,000, 100,000, 1,000,000, 10,000,000 100,000,000 ohms.
ohms.

A great advantage of this type of ohmmeter is that it is not necessary to re-adjust for zero when you switch from range to range.



CIRCUIT FOR OHMS MEASUREMENT



COMPLETE CIRCUIT OF COMBINATION V.T.V.M.—OHMMETER—MEGGER and CAPACITY CHECKER.

R1—10 megohm ½ watt.
R2—0.5 megohm ½ watt.
R3—0.5 megohm (megger zero).
R4—14 megohm ½ watt.
R5—1.5 megohm ½ watt.
R6—20 megohm ½ watt.
R7—15 megohm ½ watt 1%.
R8—1.5 megohm ½ watt 1%.
R9—150,000 ohms ½ watt 1%.
R10—15,000 ohms ½ watt 1%.
R11—1,500 ohms 1 watt 1%.
R12—150 ohms 2 watt 1%.
R13—15 ohms 2 watt 1%.
R14—25,000 ohms (Capacity zero).
R15—5,000 ohms (Ohms zero).
R16—See text.
R17—See text.
R18—10 megohm ½ watt.
R19—1 megohm ½ watt.
R20—0.1 megohm ½ watt.
R21—0.1 megohm ½ watt.
R22—0.2 megohm ½ watt.
R23—0.6 megohm ½ watt.
R24—1 megohm ½ watt.
R25—2 megohm ½ watt.
R26—6 megohm ½ watt.
R27—10 megohm ½ watt.
R28—5,000 ohms (meter zero).
R29—50,000 ohms 2 watt.
R30—50,000 ohm 2 watt.
R31—5,000 ohms (Megohms and Ohms infinity).
R32—5,000 ohms (AC zero).
R33—5,000 ohms (Capacity Maximum).
R34—25,000 ohms 25 watt.
C1—0.05 mfd 600 volts.
C2—0.05 mfd 600 volts.
C3—0.01 mfd 600 volts.
C4—1.5 mfd 600 volt 1%.
C5—0.15 mfd 600 volt 1%.
C6—0.015 mfd mica 1%.
C7—0.0015 mfd mica 1%.
C8—0.00015 mfd mica 1%.
C9—0.002 mfd mica.
C10—0.02 mfd mica.
M—0—1 DC M/a 5 inch scale.

Switching.
S1—Ohms Switch.
S2—Range Switch.
S3—Capacity Switch.
S4—Volts A.C. and D.C.
S5—Meter Polarity.

500 VOLT MEGGER.

Having found how easily megohms could be measured, I set out to devise a means of measuring megohms with a steady voltage applied, for use in testing condensers. I made up a 500 volt power supply for experimental purposes. The total series resistance was 15 megohms, and a portion (about 5 volts) of the voltage drop across it was taken off, via., a half megohm potentiometer and used to set the meter pointer to zero with the prods shorted. The same potentiometer that supplied the

(Continued on Page 19)

WIRELESS INSTITUTE OF AUSTRALIA

FEDERAL EXECUTIVE

FINAL POST-WAR PLANS FOR REGULATIONS

This plan consists of suggestions to be placed before the Chief Inspector (Wireless) of variations in the pre-war licencing conditions. F.H.Q. proposes to recommend that all pre-war conditions be retained except where they are inconsistent with the proposals set out herein, which have been derived from the original plan in accordance with comments made on the latter by the Divisions. The points in the final plan represent the majority opinion of the Divisions.

It will be noted that three classes of licence are proposed. The Class C licence will take the place of the pre-war probationary period, the Class B will be equivalent to the prewar licence, while the Class A will replace the prewar "High Power Permit." The introduction of the Class A licence should result in a general improvement of operating ability and technical knowledge among amateurs. The Class A licence would carry certain automatically granted privileges in addition to a higher maximum permissible power and these advantages should make it sufficiently attractive to achieve the above

PART 1. REQUIREMENTS FOR HOLDING A.O.C.P. AND STATION LICENCE.

(a) NATIONALITY.
Applicants shall be of British Nationality, but consideration should be given to applicants of United Nations Nationality subject to residential or naturalisation qualifications.

(b) MINIMUM AGE.
16 years.

(c) ABILITY.
Code test at 14 W.P.M. in addition to written examinations.

PART 2. CLASSES OF STATION LICENCE.

(a) Licenses shall be allotted in three classes as follows:
Class C. This class shall be comprised of all new licences allotted after 1/3/39. The licences shall have a normal tenure of 12 months only, but this shall be extendable at the discretion of the Department if circumstances warrant.
Class B. To be applied for on or before expiry of the Class C licence. Applicants must submit evidence of activity as Class C licencee, i.e., log and notes of experiments conducted. Class B licence shall be renewable every 12 months.
CLASS A. Applicants must have held a Class B licence for at least 12 months, must be 21 years of age or over, and must pass a technical A.O.C.P. examination and a code test of 16 W.P.M. Applicant must also submit evidence of Class B activity. The possession of a 1st or 2nd Class Commercial operator's certificate or a Broadcast operator's certificate **shall not** constitute reason for exemption from these requirements.

PART 3. OPERATIONAL RIGHTS OF LICENCES.

(a) FREQUENCY BANDS.
Shall be the pre-war frequency bands at 1.7, 3, 5, 7, 14, 28, and 56 Mc/s, in addition to the proposed new band at 21 Mc/s and UHF bands as proposed by the A.R.R.L.

(b) TYPES OF EMMISSION.
The following types of emission shall be permitted.

CLASS C.	CW Telegraphy only for the first 6 months, after which application may be made for permission to use AM phone for ensuing 6 months.	
CLASS B.	CW telegraphy.	
	AM phone.	
	FM phone	x
CLASS A.	CW telegraphy.	
	AM phone.	
	FM phone.	x
	Television	x
	Facsimilie	x
	Pulse transmission.	x

x When available to amateurs.

All the amateur bands shall be available to all classes of licencee.

(c) POWER LIMITS.
As measured by the DC input to the plate or plates of the tubes feeding the aerial;
CLASS C. 50 Watts.
CLASS B. 100 Watts.
CLASS A. 250 Watts.
A Class A licence may apply for permission to use higher power for special experiments, the nature of which in the opinion of the Department warrants the use of higher power. Such permits shall be for a limited period only, and extensions may be granted only on the same conditions as the original permit.

(d) PRE-WAR LICENCEES.
Pre-war licencees, who have served their probationary period (i.e., those holding station licences on or before 1/3/39) shall be allotted Class B licences on the resumption of activities.

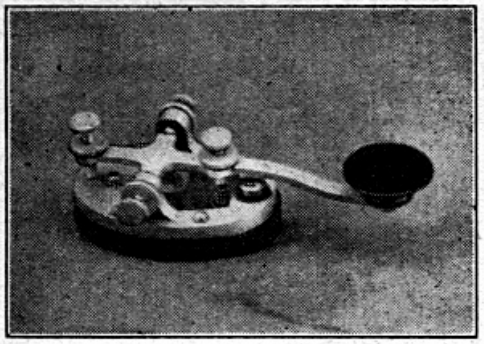
(e) PORTABLE AND/OR MOBILE OPERATION.
These privileges shall be automatically granted to Class A licencees. Class B licencees shall be required to apply for permits for portable and/or mobile operation.

(f) DISTRESS TRAFFIC.
Communication with other types of stations to be automatically authorised for amateur stations in cases of Distress, Urgency and/or safety, if after a reasonable time has elapsed since first hearing the call, it becomes apparent that no other station is answering.
A suggestion is made here that all services using the HF region (1.5—30 Mc-s) be advised that failing an answer to a Distress, Urgency or Safety call on the calling station's normal channels it is highly probable that contact could be made with amateur stations.

(g) MUSIC.
Prohibited. This prohibition shall not preclude the use of standard frequency records, test tones, or playback of a recording made of another amateur station's transmission to that station.

PART 4. CONTROL OF OPERATION.
A "Monitoring" or "Experimenters' Advisory" Committee, consisting of a number of members of the W.I.A. and a representative of the Department shall be formed in each call area. The duties of each committee shall not be restricted to the monitoring of signals from its own area, but shall embrace all areas under the jurisdiction of the Commonwealth of Australia.

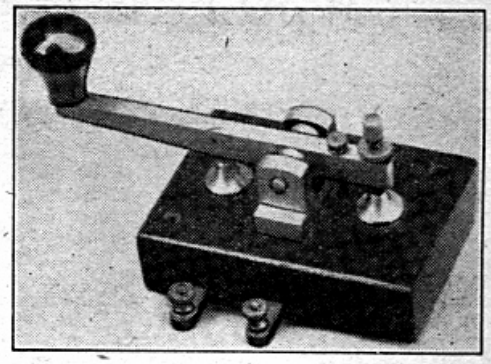
PART 5. EMERGENCY AND RESERVE NETWORKS.
The Department should encourage the formation of Emergency and Service Reserve Networks by allotting spot frequencies, preferably outside the regular amateur bands, and by any other means found possible.



Morse Keys

By Percy G. Feeny

VK2AKX*

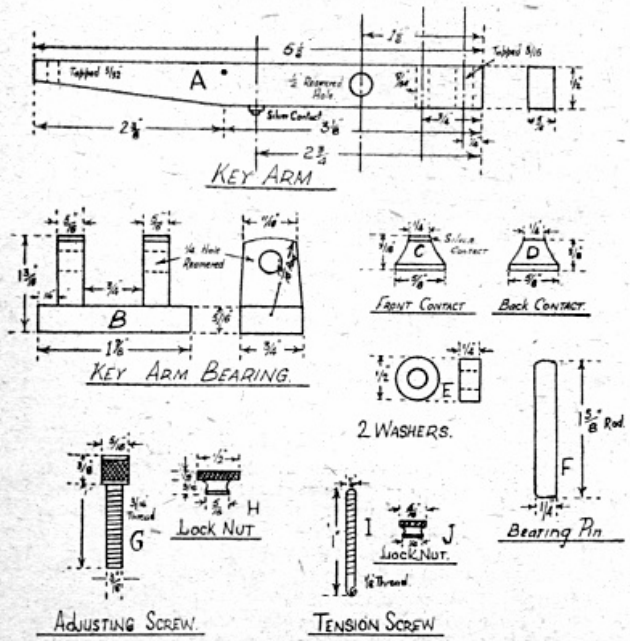


For those Hams who take pride in constructing their own gear from key to aerial, this article should prove of interest. Not everyone, of course, has the machine shop facilities available, but possibly a search through the junk box will provide most of the hardware necessary, whilst a little elbow grease and a couple of files should take care of most of the constructional work.

Although many hams are owners of morse keys, I am sure there will be many of the boys who could make good use of a new Key for the shack to replace the old trusty "pump handle," whose contacts they pounded flat in the search for DX in the good old days.

In this article the writer wishes to describe two different keys he constructed since that fatal Saturday when we received that "urgent" telegram.

THE P.M.G. TYPE.



THE KEY ARM "A" is made from a piece of brass 5½ inches long by ½ inch by 5/16 inch in section. A taper is filed on one end for a length of 2⅜ inches. This is only to improve the appearance, but prevents the clumsy look if the arm is left thick.

Marking the centres, drill and reamer the ¼ inch hole, a 9/64 inch hole for the spring tension screw, a 3/16 inch tapped hole and a 5/32 inch hole for the knob screw.

Emery the arm to a smooth finish and round off the corners at each end on the ½ inch sides.

Cut a 7/16 inch thick blank from a piece of ¼ inch brass rod and solder it under the arm 2⅜ inches from the rear end. A ⅛ inch or 3/16 inch disc of silver is cut from a silver coin and soldered to the ¼ inch block.

THE KEY ARM BEARING "B" is made from a brass casting. Make up a wooden pattern which you can have made up at any brass foundry for a couple of shillings. File to shape on all sides keeping it as square as possible, and file the top to a 15/16 inch radius. Drill and reamer a ¼ inch hole 9/32 inch from the top, and two ⅛ inch holes in the base for the mounting screws.

THE FRONT CONTACT "C" is turned from a piece of ⅜ inch diameter brass. Drill and tap a ⅛ inch hole through the base and solder a disc of coin silver to the top.

THE BACK CONTACT "D". This is similar to "C" with the exception of the silver contact which is absent here.

WASHERS "E". Two washers ½ inch diameter and 7/32 inch wide are needed. They are drilled with ¼ inch drill and it is advisable to leave one washer slightly thicker, so that it can be carefully fitted to eliminate side play.

THE BEARING PIN "F". This is a piece of brass rod ¼ inch in diameter rounded on the ends, and which must be a good fit in the ¼ inch reamered holes.

THE BACK ADJUSTING SCREW "G" can be an ordinary round head 3/16 inch bolt. However, a nicer screw can be made by soldering a knurled bush to form a head.

THE LOCK NUT "H" and "J". The former has to fit a 3/16 inch screw and may be found on old type electrical gear as binding posts. The smaller nut comes from an audio transformer and has a ⅛ inch thread.

TENSION SCREW "I". This screw may be a 1 inch brass bolt with the head removed. One end is flattened for 3/16 inch and a slot is filed to hold the top of the spring.

ASSEMBLY. A maple or hardwood base about 4½ inches by 3 inches by 1 inch was cut and the various parts of the key mounted thereon. Two terminal bars ⅜ inch by ¼ inch brass are used for terminals. These were fitted in slots chiselled underneath the base and connected to the front contact and bearing respectively.

An alternate method of making the base is to use two ½ inch pieces of masonite, mounting the parts on the top piece and grooving the lower one for the terminal strips.

This key is well balanced and heavy enough for serious work, and it will repay any Ham the short time necessary to make a good job of it.

*23 Rolfe Street, Mascot, N.S.W.

(Continued on Page 15)

SUNSPOT MINIMUM

HAS IT ALREADY PASSED?

In "Wireless World" for February, 1944, was an article entitled 1944; sunspot minimum year, in which were discussed some of the solar phenomena which occur at the end of one solar cycle and the beginning of the next. It was pointed out that, though it was impossible to say with any certainty when the minimum of the current solar cycle would be reached, there were definite indications that it was fast approaching, and that it might occur during 1944. In the July issue was a report of the indication put forward by Dr. A. H. Shapley, who, using formulae derived by Brunner, found that the minimum of the cycle might occur in 1944.9 (using the decimal date system). He was careful to add that this date should be regarded rather as an indication than as a definite prediction.

As 1944 is now well past it may be interesting to see what variation in solar activity did take place during that year, but it should first of all be stated that, because the solar activity fluctuated widely from day to day, it is impossible to know that the minimum has actually been reached until sometime after that event. The solar activity—as evidenced by the size and frequency of appearance of the sunspots, and in other ways—may temporarily increase only to decrease again to a new low level. Nevertheless the solar happenings of recent months do indicate that the minimum is possibly already passed, and that the sun's activities has begun its rise towards the next solar maximum, which may occur in four or five years' time.

EFFECTS ON RADIO. Before going into any details about the solar activity, it may—at the risk of being repetitive—be as well to reconsider the connection between it and the science of radio communication. Why should the radio man be at all interested in these solar phenomena? Well, it is because of the fact that the short radio waves are dependent for their propagation over long distances upon the state of the ionosphere, and that the ionosphere is produced—at least largely, if not entirely —by the ultra violet light radiated by the sun. The degree of ionisation of the gases in the ionosphere therefore changes with the variation in solar activity; reaching high levels at the maximum of the solar cycle, and low values at the minimum. When the ionisation is high then higher frequencies (shorter waves) must be used for a given distance for good propagation by the ionosphere, and when low ionisation prevails the lower frequencies longer waves must be used. Consequently, as the solar activity increases again we may expect to have to make more use of higher short wave frequencies than for the past few years, perhaps to bring into use high frequencies not hitherto used, and to discard some of the lower ones.

To return to the recent variations in solar activity, The sunspot activity is measured and recorded by means of a system of "relative sunspot numbers," which takes into account the number of sunspot groups and also the number of individual spots observed at different observatories, this "relative number" may thus be regarded as a measure of solar activity as evidenced by the sunspots. The table gives the yearly means of this number for each year since 1937, the year of the last solar maximum.

YEARLY MEANS OF RELATIVE SUNSPOT NUMBERS.

Year	Sunspot Number
1937	114.4
1938	109.6
1939	88.8
1940	67.8
1941	47.5
1942	30.6
1943	16.3

It is seen that the activity has decreased year by year from then, so that the mean for 1943 was at the low value of 16.3. Although the yearly mean for 1944 is not yet available, it was probably about 10.0. The yearly mean for 1933—when the previous minimum occurred—was 5.7.

LOWEST LEVEL.

During the first few months of 1944—judging from the **monthly** mean of the sunspot numbers so far available—the solar activity dropped to even lower levels than had occurred towards the end of 1943; indeed, during February and April there were practically no sunspots observable. But in August there was a considerable increase, and up to the end of December this increase had been **fairly** consistently maintained. So that as far as the period 1943-1944 is concerned, there was a minimum in the activity at **about** 1944.5. Was this the actual minimum of the sunspot cycle, or may the activity fall to a new low level? That is a question which only time can answer, but it may at least be said that there is a distinct probability that the minimum is indeed already past, and we are definitely on the way towards a new maximum.

During December there appeared a major group of sunspots—the first **large** group to be observed for many months—and this crossed the sun's central meridian on December 14.3. It was in solar latitude 22 deg. South, and this fact indicates that it might properly be considered as belonging to the new cycle. For towards the end of a cycle, the spots belonging to the old cycle appear in low latitudes—around 8 degrees—but there also begin to appear sunspots in high latitudes (20 deg.-40 deg.), and these are considered to belong to the new cycle. These high latitude spots have been appearing for the past eighteen months, and with increasing frequency during that period.

As was explained in the "Wireless World" article first a reversal of polarity at the end of the cycle, the Mount referred to, the magnetic field of the sunspots undergoes Wilson Observatory has observed this reversal of polarity to be occurring in the case of the high latitude spots for some time past. There are thus the three facts (a) the reversal in magnetic polarity of certain sunspots which has been observed for some time; (b) the observation with increasing frequency of the past eighteen of high latitude sunspots; (c) the increase in sunspot activity which commenced in August, 1944, which would seem to indicate that the solar activity has now started a general increase towards the maximum.

IONOSPHERE DISTURBANCES.

Incidentally, readers will no doubt remember that the sunspots besides producing a rise in the ionisation of the upper atmosphere, such as gives rise to good propagation of short waves, sometimes also appear to be responsible for temporary ionosphere disturbances, radio fade-outs and magnetic storms. They will therefore be interested to know that, following the passage across the sun's central meridian of the large sunspot group on December 14.3, there was a considerable disturbance in the earth's magnetic field on December 16th-17th. A number of sudden radio fade-outs also occurred, and then ionosphere conditions were very "stormy" from December 16th-20th.

IN REVIEW

TECHNICAL BOOKS —— RECORDINGS —— PRODUCTS

——RECORDINGS.

MAJOR WORKS.

Ein Heldenlieben. (Hero's Life) Rich. Strauss.

Philadelphia Orch. Cond. by Eugene Ormandy. H.M.V. ED 334/8.

This work was dedicated to William Mengelberg whose imported recording is said to be incomparable. However, Ormandy's high fidelity recording is super, and Richard Strauss lovers will be well pleased.

Concerto for Oboe and Strings. (Cimorosa arr. Arthur Britten). Leon Goosens (Oboe) and Liverpool Philharmonic Orchestra, cond. by Malcolm Sargent. Col. D.O.X. 742/3.

Leon, brother of Eugene Goosens, famous conductor and composer, gives a masterly performance of an instrument rearely heard in concerto form.

ORCHESTRAL.

Pelleas and Mellisande. Incidental Music—Faure. Cond. by Serge Koussevitzky. Boston Symphony Orch. H.M.V. E.D. 340/1.

Faure's suite is in three movements. Prelude, called "The Spinner," and a Molto adagio, associated with the death of Melisande. The music is intensely moving throughout. Koussevitzky and his great orchestra are at their flawless best and are superbly recorded.

Dubinushka. ("Little Cudgel"). Rimsky-Korsakov.

A Russian folk song that always signified revolt to the Russian workers of the Czarist days. When the abortive 1905 uprising took place, Rimsky-Korsakov, then a professor at the St. Petersburg Conservatorium made this orchestral setting of Dubinushkaa as an expression of his sympathy with the Revolutionary cause.

The above is the fourth side of the Faure discs also played by the Boston Symphony Orchestra, cond. by Koussevitzky.

INSTRUMENTAL.

Sonata in F Major K. 376. Mozart. H.M.V. Ed. 342/3. Hepzibah and Yehudi Menuhin, Piano and Violin.

This Mozart sonata is a "first recording" now issued, and is one of a group published in 1791 under the title, "Six Sonatas for the Clavier with violin accompaniment." The title throws an interesting sidelight on the status attained by the violin since those days. The work is delightful.

Sonata in G Major. (Scarlatti). "Jesu Joy of Man's Desiring." (Bach-Hess). Myra Hess (Piano). H.M.V. EA 3248.

Dame Myra Hess was born in 1890. In 1902 she won her scholarship, in 1907 made her debut. She is noted especially for her playing of Bach and Scarlatti, two famous examples of which are presented on this record.

VOCAL.

Sea Shanties—Medley. The Georgian Singers, cond. by Leslie Woodgate. Col. D.O.X. 745.

When tasks of a rythmic nature were performed on sailing ships, a special shanty man sang the verses while the rest of the gang joined in the chorus, thus achieving a unanimous pulling of rope or pushing of capstan.

La Traviata (Verdi) "Now Command Me." "Ah, Say to thy Daughter." H.M.V. E.B. 244. Joan Hammond, soprano, and Denis Noble, baritone.

Australian born Joan Hammond's lovely lyric soprano voice is heard in duet with one of England's most popular baritones. Born in Bristol in 1898, Noble entered his profession by chance. On leaving school he joined the Army, only to be wounded, and while convalescing, appeared in Leslie Hensen's concert party. Later he was specially trained by Dinh Gilly for operatic singing and made his debut in 1925. He has since won fame both in England and New York.

"Love Walked In," (Gershwin). Minuet in G (Paderewski). Andre Kostelanetz and Orchestra. Col. D.O.X. 744.

Russian born Andre, besides being a brilliant musician, speaks seven different languages, dabbles in chemistry and photography. His treatment of a tune, however hackneyed, is bold, incorporating complete woodwind sections (including three oboes, massed strings and strong brass sections), the combination consisting of 45 men—16 violins, 3 violas, 3 'cellos, 3 flutes, 3 oboes, 3 trumpets, 3 trombones, 2 string basses, 2 pianos, 4 saxes, guitar, drums and harp. The varied effects come from the strings and basses, while the rhythm invariably in dance time, remains unbroken and provides foundation for the rest of the orchestra. The result is harmonious, rythmical and exciting.

SWING STYLE.

Victor Silvester's Swing Style. "How Come You Do Me Like You Do." Boston Bounce. Col. D.O. 2770.

Vic. Silvester's Jive Band has won the praise of many swing lovers. George Chisholm, England's greatest Jazz soloist, is given many opportunities to go to town with sometimes whole improvised choruses, to say everything for the other notable swing musicians who constitute this purely recording combination.

Vic Lewis and Jack Parnell's Jazz Men. "Johnny's Idea." "Mean Old Bed Bug Blues."

Personnel. Lewis (G), Parnell (D.S.). Derek Hawkins (Alto CL.), Ronnie Chamberlain (Sop. Sax.), Billy Riddik (T.P.T.), Dick Katz (Piano), Charlie Short (B). February 12, 1944.

This enterprising little group, recruited by Vic Lewis and Jack Parnell (of Buddy Featherstonhaugh's Radio Rhythm Sextet) exclusively for these Parlorphone recordings in one of the few, if not the only one, in England, that attempts to play real Jazz.

This being the first release here in Australia of at least half a dozen recordings made and issued in England by them, should prove of interest to Jazz lovers.

MAGNETIC WIRE RECORDER.

Members and visitors attending the general meeting of the Victorian Division in September were privileged to witness a demonstration of a magnetic wire recorder, kindly turned on by Captain T. Cadell, VU2EB.

Of American manufacture, the recorder is contained in a case about the size of a portable typewriter. The front panel, which is inclined at an angle of about 20 degrees from the vertical, carries two pins upon which are mounted two spools of about four inches diameter by two inches deep. One spool carries the wire which is fed over a guide roller, through the recording head and over a second guide roller, and is finally wound onto the second spool. Two arms, which project from the panel, traverse back and forth across the spools ensuring that the wire is wound on in even layers. The wire used is of high tensile steel of about 40 gauge. The principle upon which the magnetic wire recorder operates is, of course, fairly well known to most Hams.

The recorder consists of a high grain amplifier, the output of which is fed to the recording head, which is essentially an electro-magnet, between whose poles the field is varied in accordance with the speech currents fed to the head. Therefore, any wire of sufficiently high permeability which is fed between the poles will have its molecular structure re-arranged to conform with the magnetic field to which it is subjected. Consequently, reproduction simply necessitates the changing over of the head from the output to the input of the amplifier and the addition of a speaker to the output. If the wire be passed through the head once more, the varying flux densities, caused by the speech currents will set up corresponding voltages in the head which are amplified in conventional manner.

Although expressly designed for the recording and reproduction of speech, the recorder gave a surprisingly good account of itself on music, as was evidenced by the few recordings made the previous night by Capt. Cadell from a session on one of the local broadcasting stations, (whose Chief Engineer happened to be present).

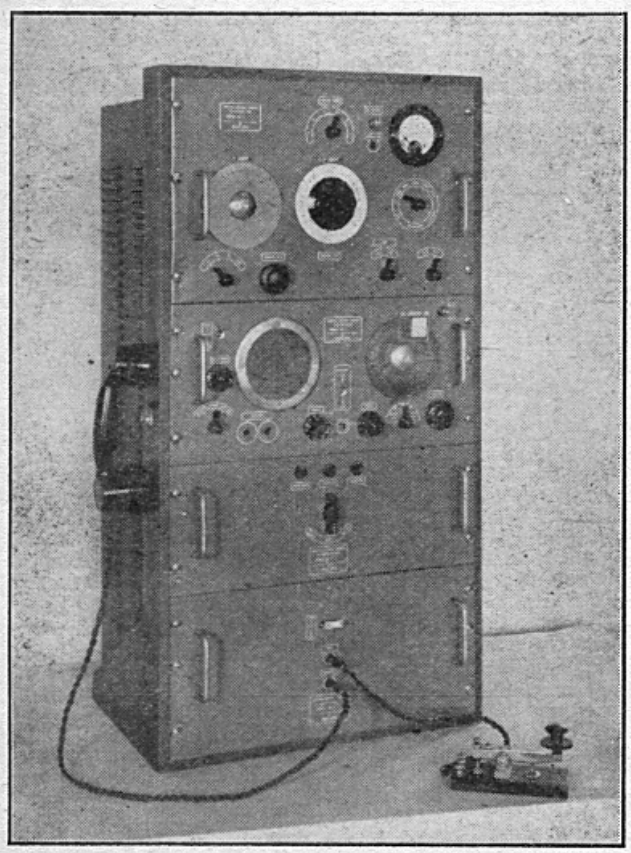
Those present were given the opportunity of recording their voices, and sixty pairs of Ham hands lovingly caressed the sleek outlines of the "Turner" Dynamic mike as it was passed around, and many envious comments could be heard.

One feature of the recorder is the fact that the wire can be used over and over again, the mere action of imposing a new recording on the wire automatically erases the previous one.

Sixty-five minutes of playing time can be obtained from one spool of wire which contains approximately 10,000 feet of wire.

Whether or not the magnetic wire recorder is applicable to really high fidelity recording, remains to be seen; the fact that it is possible to record a complete symphony, or concerto in one shot instead of in 10 or 12 bits as in the disc system, appeals to your scribe, apparently much more than it does to the manufacturers of these latter commodities, who appear to have spent a considerable amount of money lately in telling the public that these new fangled contraptions will never supplant the disc.

PHILIPS TYPE D.R. 101 TRANSMITTER-RECEIVER R/T or C.W.



Our photograph on this page shows a rack and panel assembly of gear that any meticulous "ham" would be proud to see gracing his shack. It is not a "ham job" in the sense that it was designed from a commercial angle during the war, and for use by Allied Fighting Services. Nevertheless, we can't help feeling that considerable "ham" influence among the engineers responsible for it, had something to do with its evolution. Produced recently in the factories of the Philips Australian organisation, it is a credit to the name of the famous parent concern. It is known as D.R. 101. The rack carries four sections, attractively finished in grey lacquer, the panels from top to bottom housing respectively R.F. and modulatro section, receiver, generator unit for emergency battery operation, and A.C. Rectifier supply unit.

The transmitter covers 1.8 to 3.1 mc/s (97 to 167 m) and the receiver 550 Kc/s to 22 mc/s (545 to 13.6 m), with operation from 115-230 volts A.C. or a 24 volt accumulator. Flexibility of transmitter control is provided by calibrated V.F.O. supplemented by switching for 3 crystal frequencies. Valves in the R.F. line-up are 6L6G OSC, 6L6G buffer, and parallel 807's for P.A. The modulator uses two 6L6G's and two 807's in class AB1.

With A.C. supply R.F. output averages 40 watts (unmodulated) and 12 watts from generators. The receiver is a neat and very effective communications job with no unnecessary "bits and pieces." Switched in 3 bands over the range stated, it has the essentials such, as A.V.C. B.F.O. speaker muting for headphones, but no costly "extras." The third tray carries the generator units. An interesting point about the latter is that one generator is a 50 cycle 115 volt alternator—and is used to power the receiver alone, thus permitting application of standardised A.C. equipment from a 24 volt D.C. source. The bottom assembly is the usual A.C. rectifier and filter unit for normal operation. The whole transmitter-receiver is provided with a dust-proof cover totally enclosing the units, but with adequate provision for ventilation.

Equipment has to be more than good to bear the name Philips ,and this DR 101 is certainly a job to be proud of.

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APPLICATIONS are invited for the positions of

CLASS MANAGER, MORSE INSTRUCTOR AND THEORY INSTRUCTOR.

Instructors rate of remuneration not yet fixed.

Further particulars are available from the Secretary, Box 2611 W G.P.O., Melbourne, or phone (evenings only) WM 1579.

HAMS ON SERVICE

Good news this month—in the lists of liberated Prisoners of War in our daily papers he Hams are represented—there is no doubt about it, you find these Hams in everything. To most VK2's it is a great pleasure to see the name of F/O W. M. Moore, VK2HZ, appear safe in Batavia, also Tom Slawson, VK2AFN. Chas. Roberts, VK2JV, who was a very great help to the VK2 Division as a kind of unofficial, and always, willing adviser, is as yet unfortunately not listed.

In VK3, however, Hams in that State will be pleased to know that of the six Victorian Hams who had been reported "Missing, believed Prisoner of War," five have already been recovered. Flight Lieutenant Arthur Tinkler, VK3ZV, has arrived back in Australia. Warrant Officer Roy Prowse, VK3XS, is believed to be on his way home, and Major Lyle Andrews, VK3HY; Lieutenant Gordon Weynton, VK3XU, and Sergeant K. W. Oliver, VK3GZ, have been reported recovered. Sergeant Jack McCandlish, VK3HN, has not yet been accounted for.

Jack Mackel, VK2HG, who started off in tanks, is at present attached to a workshops unit (radio, of course), in New Britain, and by now possibly at Rabaul. Jack, like most of us, has very high priority for his post-war rigs.

The cessation of hostilities has skyrocketed the attendance at the VK2 Division, in fact, all other Divisional meetings as well. Lionel Swain, VK2CS, a Ham who claims that his ticket was issued as far back as 1919, was at the last VK2 meeting. 2CS was leading a nice quiet life in the Water Board at Newcastle when "things began." The Navy had his services for three years—and the Navy gets around, and so did Lionel. Leaving that service, he finally appears as in charge of Radar for the Department of Munitions. Strangely enough, his opposite number in VK3, another old VK2 Ham, Dave Gray, 2IJ, was also at the VK2 Divisional meeting. Ray Conrad, VK2TR, who also is in the Navy as pertains to Radar, renewed acquaintance with Ham radio in September.

It seems that the R.A.A.F. are being left out up to date, but a note from Jim Stevens, VK3ZK, informs us that he is now back at Rathmines, and is now a Sergeant, having acquired his third stripe recently. All Hams who know Jim will realise just how well he is living up to his old call "Zebra King." However, the jobs that Jim falls for are just nobody's business—he is now a projectionist at the unit movies, and puts on six shows a week, and they are better than some city shows, even if I say so myself, he says. The outfit, R.C.A. Photofone projectors and 2A3's in the audio output.

The war now being over, C.P.O. Frank O'Dwyer, VK3OF, reckons that the quicker the "Australia" leaves for VK the better. He says that alas when they were in New York, Ham gear was pretty well unobtainable, that is gear a VK Ham would want to buy there, and the priority system was in operation too, making things even more difficult. He hopes that New York is on the track homeward.

VK2ADE paid a visit to 2YC—he said a farewell visit in R.A.A.F. togs as he had received his discharge that day. It's back to the radio business and Miss and Master Miller from now on. Oh, well, Chas. you saw a good bit in the first few years.

Up in Canberra after the war worries are the dilemma of VK2EO and VK3RY. Ray Smith says don't tell the war is over. For six years he says all the ships preserved Radio Silence, and the Operators only "looked at" the Transmitters—but now they can send messages on them, and, adds 3RY—"and how." Ray has an all Ham staff at the moment—2ACG, 3RY, and 4NO. Another Ham, L/Tel Alan Rogers, VK3UI, of Mildura, has recently joined the gang at Harman.

While talking about Mildura, Telegraphist J. M. Coulter, VK3MV, writes: "We arrived off Hong Kong on the 30th of August and commenced sweeping operations. The following day we swept right to the boom. Having cleared a passage of all mines, the lead was taken by a couple of destroyers and a cruiser—just in case heavy guns were needed as we entered the harbour. The State of Victoria and the City of Mildura in particular will be pleased to know that H.M.A.S. "Mildura" was the first Australian ship to enter Hong Kong for over three years. As we entered the harbour, Marines were put ashore, and after a few skirmishes, the dockyard was taken possession of. On board the only Jap ship afloat, a couple of Japs attempted to use their main armament, but a Marine planted a heavy boot just where it does the most good, and the other Jap threw his hand in, as did the rest of the crew. It was strange to pass within a few feet of Japs and carefully ignore 'em. They were not there, and neither were we. There's good material for a yarn to the boys when I'm next in Melbourne, so I'll keep the rest, hoping to hear you all on the air soon."

Cec. Light, VK2QM, and Sgt. Mills, VK2AJN, are now back in civies. Well I call that pretty quick work, Cec. Better send me that "Story" before you forget what happened—and how about yours to AJN?

Reg. Morgan, VK2ABM, whose rank is covered by LS/LTO, after a very nice and nobly deserved spell on shore writes from Australia's newest and most modern destroyer, "Bataan." From press despatches when you read this, Reg. should be having, or had, a look over Tokyo. When he wrote he thought the war would "end soon"—he was three days too soon. On board the "Bataan" there are, of course, Hams. This time VK2FF and VK2YA (Bob Cairns, of Kurri), help to make up the three way talks that begin, "I'm going to . . . . "

Frank Goyen, VK2UX, has been paying the R.A.A.F. in various spots in Borneo, and from his letter expects to keep doing so for years. He has just received a W.I.A. letter that has been chasing him for 14 months.

VK2XC, Ian Cuffe, now Lt. Commander R.N.V.R., recently fleet Radar Officer, R.N. Pacific Fleet, was in Sydney for a short time lately, but has now returned via Hong Kong to the United Kingdom for discharge.

Amongst those Mentioned in Dispatches has been Vince Egan, VK2AJI, F/Sgt. in the R.A.A.F., who was a member of a patrol which went up through Dutch New Guinea, all through unexplored territory, and maintained communications throughout the journey. So says the citation, and, as you know these citations are pretty bald kind of things. Vince is somewhere up around the Philippines.

Harry Hutton, VK2HV,—well Harry has just spent a spot of leave at his home town, Inverell—that leave was helped by VK2AGA and VK2ZP, and the latter tells the story the best if you ever want to hear about it. Oh, you can find 2AGA at Somers, just look at all the Sergeants passing and ask all the ones with a Ham-like look. Getting back to 2HV—Harry has been "all over the place" but mostly around Hollandia. He has, I believe a notebook full of notes about the Hams he has met, so I hope in the near future to lend him these pages till he exhausts the note-book—How about it Harry?

Sgt. Bill Williams, VK3WE, is no longer a member of H.M. Australian forces. He heard at the beginning of one week that he was to get his discharge. Someone, wishing to contact him near the end of the week, rang his unit, to be told that Sgt. Williams was no longer a member of the Defence Forces. Bill is now to be located back in Omeo at his old job of distributing the local news, and where no doubt he will resume his old signature, "The Old Man of the Mountains."

VK4CJ, Cedric Marley, of the Navy P.O./Tel., he was—has been round the world a couple of times and passed through Sydney last month. While in England, he married an English girl, and is said to be going to be a VK2 for the future.

VK2LZ, W/O Con Bischoff, was down in Sydney on leave and left a book on astronomical telescopes as a temptation to me. He reports that at R.A.A.F. Townsville they still claim "All States" and have everything worked out for the new rigs and receivers.

Since the cessation of hostilities, one hears of many Hams being discharged from the various services. The latest to be known are Wing Comander Bill Gronow, VK3WG, and Wing Commander Bob Cunningham, VK3ML. It is reported that Bill has gone to work with a radio firm, while Bob has returned to his old peacetime occupation of Industrial Chemist. It is also reported on good authority that Group Captain Vaughan Marshall, VK3UK, will shortly join the ranks of discharged servicemen.

Sgt. Allan Joscelyne, VK2AJO, after spending quite a long time at Bonegilla, has lately reported to Albert Park, Melbourne, where he, together with Sgt. Fred Smith, VK3FR, were to do a crystal grinding course, much to their glee, as they anticipated being able to grind their own rocks when they wanted them. We hope the powers that be allow them to complete their course.

As the war is over, and all Divisions are getting more active, would the various Divisions appoint somebody to keep me informed of Hams in the Services, and also those being discharged in their States. This is going to be very necessary in the future, as with the Magazine being printed there will be more space to fill up.

For those who do not know the address, and for those who do not use it, please contact J. B. Corbin, VK2YC, 78 Maloney Street, Eastlakes (Mascot), N.S.W. The telephones are MU 1092 and MU 1879.

We regret to report that Pilot Officer J. E. Snaddon, VK3VE, who was reported missing in "air operation" in the European theatre during May, 1944, has now been presumed killed.

It is with regret also that we learn of the death of Corporal W. M. Gaze, who lost his life as a result of an air crash in Queensland recently.

To Mr. and Mrs. J. H. Snaddon and their family, and to Mrs. Gaze, we offer our sincere sympathy in their loss.

ANY IDEAS?

Now that hostilities have ceased and the time when the Ham will be back on the air is rapidly approaching, the Ham, no doubt, is busily planning his new outfit.

There is perhaps, no other group of enthusiasts whose opinions differ so widely in respect to the particular type of gear, and more particularly to the layout of that gear.

The idea has occurred to us that, in view of the fact that there are so many individual ideas of the best type of gear mounting, and the operating position, that those ideas could be "aired" through the medium of this magazine.

Some Hams prefer rack and panel, others mount their gear direct on the operating table. One Ham in pre-war days went so far as to mount all the gear underneath a table with the controls coming out on top of the table—all these ideas would undoubtedly help someone.

If you can furnish a sketch plan, or better still a photo either of pre or post-war vintage, it would be most helpful in illustrating the idea behind the layout.

FEDERAL HEADQUARTERS

"When do we get back on the air?" Members of the Federal Executive have heard that question so many times in the last few weeks that they can now tell by the gleam in a fellow-Hams eye whether it is going to be asked, even when said Ham is ten yards off. In fact, this question has been so popular lately that Federal Executive officers may be seen almost any day walking about with that glassy look, muttering, "When, oh, when?"

Naturally, we, too, have been anxious to find the answer, so we approached the P.M.G.'s Department with a request for information. We were advised that the matter of frequency allocations, which is the key to the whole situation, is in the hands of the Navy, and that as our frequencies were required for use during occupation of enemy held territories it may be some months before we could expect to get them back.

In response to many requests, we then asked whether we might be permitted immediate operation on some of the VHF bands. We also took up the questions of release of equipment, exemptions from parts of the A.O.C.P. examination for servicemen suitably qualified, and immediate application by amateurs for renewal of licences. This latter, we thought, might be the means of avoiding a rush of clerical work in the Department later.

In a letter dated 10th September, the Chief Inspector has given us the following rulings.

"1. Because of National Security Regulations still in force it is impracticable at present to accede to your request for the release of amateur transmitting equipment held by the Department, or to permit operation of Experimental stations.

"2. It is not the practice to grant exemptions in any portion of the examination for the Amateur Operators' Certificate of Proficiency, unless the applicant had previously qualified at an examination held by this Department. It is regretted, therefore, that the privilege cannot be conceded to servicemen.

"3. As no advantage is likely to accrue at this stage, either to experimenters or the Department, from the lodgment of applications for renewal of licences, it is not proposed to take such action until the situation becomes clearer. The matter of licencing experimental stations is at present receiving consideration in collaboration with the Department of the Navy, and you will be advised as soon as a decision is reached in regard thereto."

That is the position as it stands at the time of writing these notes, but F.H.Q. is continually on the move, and members may rest assured that they will be advised promptly as developments occur.

Having for the time disposed of your favourite question, we would like to put one to you in return—"What is going to happen when we do resume?" There seems to be a burning ambition prevalent among Hams to whom we have spoken recently, to be first on the air, or to be on within a few hours of the great moment.

This is something which may cause a great deal of trouble, unless each and every Ham uses his head. The fellows who have 1939 rigs in going order, requiring only the insertion of tubes, coils, etc., may be for the most part O.K.; but imagine what is going to happen if a thousand or so hurriedly built haywire transmitters are suddenly to open up? Remember, too, that such rigs would likely be feeding even worse contraptions in the way of skywires.

Just consider for a moment the chirpy signals, over modulated phone, off frequency operation, harmonics and BCL QRM likely to result. Whether you are a new Ham or old timer, if you have to build a new rig to get on the air, for the love of Amateur Radio be sure of what you are doing. We will be starting off with a glorious war record, let us preserve its memory in good operating and gentlemanly conduct.

In recent months there has been much talk of post-war licencing conditions, and FHQ has been active in setting out a number of proposed amendments to the pre-war regulations. Some time ago we submitted these to the Divisions, and following receipt of their comments, a second edition has been drawn up. Due to the sudden end of the war, this edition must necessarily be the final one, and by the time you read these notes, FHQ will be negotiating with the Chief Inspector along the lines of this plan, which is published elsewhere in this issue of "Amateur Radio."

Speaking of "Amateur Radio," we take this opportunity of extending to the Editor, the Manager and the Committee of "Amateur Radio" the congratulations of FHQ on the occasion of the first printed issue of the Magazine since 1941.

The duplicated magazine was good, but the limitations imposed by the duplicating process constituted a severe handicap to the effective production of a technical journal. However, the magazine has now moved out of the shadow of that cantankerous machine, and we feel sure that from now on "Amateur Radio" will rapidly progress to the stage where it can take its place with the best in radio periodicals catering for the Amateur. We wish the management and staff of "Amateur Radio" every success in their efforts to provide a better, bigger and brighter magazine.

THE WIRELESS INSTITUTE OF AUSTRALIA

Divisions of the Wireless Institute of Australia exist in every State of the Commonwealth. The activities of these Divisions are co-ordinated by Federal Headquarters Division, the location of which is determined from time to time by ballot.

Present Location of F.H.Q. : Victoria.

Federal President: R. MARRIOTT, VK3SI

Treasurer: T. D. HOGAN, VK3HX **Federal Secretary:** A. H. CLYNE, VK3VX

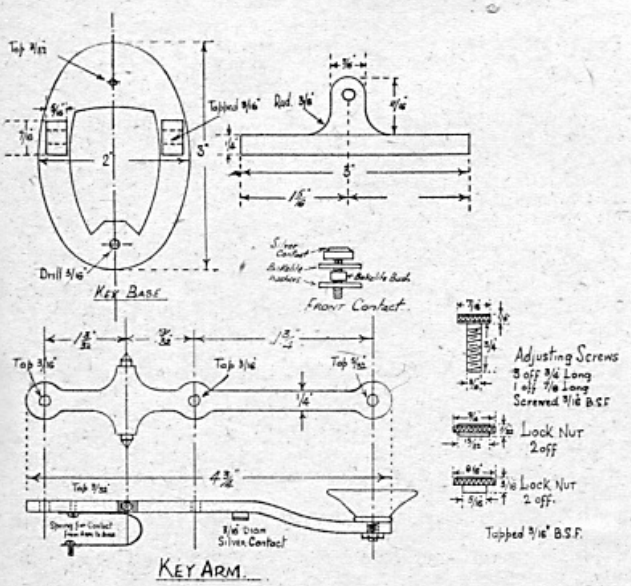
Councillors: A. R. WILLIAMS, VK3WE; C. C. QUIN, VK3WQ

Official Organ : "AMATEUR RADIO"—Published by the Victorian Division.

MORSE KEYS

(Continued from Page 6)

THE NAVY KEY.



This key will be familiar to most Hams, and is a Chinese copy of a key made by Messrs. Bunnell and Co., of New York. The original was kindly loaned to me by Wal Ryan, VK2TI, to whom I wish to tender my thanks for his indispensable services.

THE KEY ARM. The key arm is cut and filed from a piece of $\frac{1}{4}$ inch steel. Mark out the outlines and keep to a nice curve in the centre of the cross arm. Care must be taken in filing the cones for the bearings. Two 3/16 inch tapped holes and a 3/32 inch tapped hole for the contact spring are needed. Bend the front leg of the arm to drop the knob about $\frac{3}{8}$ inch lower than the rest of the key. The silver front contact is soldered under the arm $1\frac{1}{8}$ inch to the front of centre.

THE KEY BASE. The base is made from a brass casting, and is filed smooth all over. Two 3/16 inch tapped holes are drilled i nthe uprights, care being taken to keep them both in line. A $\frac{1}{4}$ inch hole is drilled in the front to take the ebonite or fibre bush for the front contact. A bakelite washer is placed under the contact and also under the nut underneath.

THE BEARING SCREWS. These screws are 3/16 inch on the thread and are $\frac{3}{4}$ inch long, with a 1/32 inch hole 1/16 inch deep drilled in the end of the shank to take the cones of the key arm. The large lock nuts are used on each of these screws.

The screw which is used for varying the tension of the spring is also $\frac{3}{4}$ inch long, and has a similar hole in the shank to take the tip of the spring which in this case is of the compression type.

THE ADJUSTING SCREW is another 3/16 inch screw, but it is $\frac{7}{8}$ inch long to allow it to reach the base. One of the smaller lock nuts is used on this screw and the other on the spring screw.

THE CONTACT SPRING. A piece of thin shim brass or copper is cut to 2 inches long and $\frac{1}{8}$" wide with 3/16 inch diameter circles on each end. A 3/32 inch clearance hole is drilled in each end. This spring is bolted to the underneath of the key arm and then after bending gently to the shape of a "U" is bolted to the rear of the base. It

(Continued on Page 20)

DIVISIONAL NOTES

NEW SOUTH WALES DIVISION

The September General Meeting of the Division was held at Science House, Gloucester Street, Sydney, on 20th September. The usual large number of members and visitors were in attendance and included many faces that we had not seen for years.

Among those in atendance were: 2DR, 2AJW, 2AKU, 2LO, 2TI, 2RA, 2AFQ, 2NO, 2NP, 2NQ, 2DT, 2YC, 2AKR, 2EE, 2IE, 2DI, 2WD, 2WN, 2ALD, 2KB, 2HP, 2ADQ, 2NG. Numbered among the visitors were G2DU, VK3-WY, 2TR, 2ZW, 2CS, 2DA, and 2JX.

The chairman in declaring the meeting open, welcomed visitors, particularly G2DU and VK3WY, secretary of the VK3 Division.

Members were informed of efforts to get back on the air, and it was stated that American Amateurs were operating on a band between 112-115 mcs., and that additional privileges were expected after 15th November. A press cutting with a London address stated that English Amateurs would be permitted to operate at the end of September. Swiss Amateurs were active in the 7 mc. band, with transmissions confined to that country's borders. In Brazil, "Radio News" reports that the PY's were authorised to operate on 56, 112 on an experimental basis and that transmissions of one hour's duration confined within the country were permitted three times weekly on 1800-3500 kcs. Getting nearer home, ZL amateurs have had their equipment returned to them, and are permitted to build it up and test with an artificial aerial.

The Final Draft Plan for Federal Headquarters was discussed, and despite the fact that these proposals or the draft leading up to these proposals had been circulated to members since June in various degrees towards finality, members took exception to them, and after quite a deal of discussion it was decided that F.H.Q. be requested not to put them before the C.R.I. until such time as a general meeting of all N.S.W. Amateurs had been held on the second Thursday in October. Whether this is a wise move at this late stage in the proceedings, time alone will tell.

Members were pleased to learn that the Magazine Committee had decided to again publish the Magazine in printed form. Over the war years, the Magazine Committee have had a particularly difficult task, and they are to be congratulated upon the fact that they kept the magazine going during those years. Members would do well to remember when they feel like criticising any shortcomings that publishing the magazine is a voluntary job carried out by fellows just like yourselves, whose only reward is the knowledge that they are serving Amateur Radio.

Padre Dransfield give a brief resume of his activities, and it is unfortunate that the Institute has not a couple of hundred members of the same calibre.

In reply to questions, members were informed that VK2HZ, 2AFN, and 2JC had been reported safe as P.O.W.'s, and expected to be repatriated very soon. As yet, there is no news of Charlie Roberts, VK2JV, last reported in a Singapore Hospital, some years ago. Should any member have news of 2JV, kindly communicate with FX3305. It is the intention of the Institute to hold a Complimentary Dinner in honor of these repatriates in the early future, and members will be advised of particulars as soon as possible.

Some questions were asked regarding the Institute's domestic Post-War Plans. The first of these calls for permanent Rooms, including Class Room for A.O.C.P., Workshop, Library and Transmitting Room. Unfortunately floor space is at a premium these days, and up to the present, it has been impossible to obtain accommodation.

The October General Meeting of the Institute will be held at Science House, on Thursday, 18th October, and you are reminded that the NOVEMBER General Meeting will be held on the FOUTH Thursday and NOT the third.

TASMANIAN DIVISION

At a summoned meeting of city and suburban hams on Friday night, 31/8/1945, the Tasmanian Division of W.I.A. was reactivated, 12 members forming a neucleus upon which to rebuild, this after several years respite is most encouraging.

A Council, consisting of President, Lon Jensen, 7LJ; vice-president, A. E. Allen, 7PA; secretary, Joe Brown, 7BJ; treasurer, Alan Finch, 7CJ; K. Melville Kelly, 3LL; Max Loveless, 7ML; C. Walch, 7CW; was elected; others present were M. Glover, 7MG; E. Nicholls, 7RY; R. Forsyth, 7BC; O. S. Dahl, 4KA; N. Hopwood, 7GJ; Alan Burke and ex-secretary, Chummie Moorhouse.

Our honorary life member, "Pop" Medhurst, 7AH, was elected Patron.

Several apologies were received from those unable to attend, and letters from country members stated their desire to participate in the revival, and prospects generally seem bright for VK7.

Letters from Federal Headquarters were dealt with and other matters put in hand, a meeting room being amongst these.

As will be seen by the meeting list, several northern hams have drifted south, and we welcome their presence, also other States are noted and welcome in 3LL and 4KA, also 6AR, who was unable to get along, but we hope to see him next meeting. Bert is a very busy man.

A minute of appreciation was made to 7PA for the work he had done during the years of inactivity, by keeping VK7 in touch with F.H.Q. throughout.

General meetings are set down for the first Wednesday in each month for the present ,and it has been arranged to procure the Photographic Society's room in Liverpool Street for this purpose, until some permanent quarters can be acquired.

JOTTINGS.—Chummie Moorhouse is not re-joining. He had become a bird fancier during the years of recess. Best of luck, Om.

7AH was not "on deck" for the meeting. Had a batch of 'flu, which kept him indoors. Must have been a bad attack, Pop, but you can't keep a good man down.

The re-appearance of 7CW is very pleasing, and we trust that he can find sufficient time to continue the good work.

Our new Secretary is very promising, but also very modest. You'll come good, Joe.

Association with 3LL proves him to be full of beans, and he should be a valuable asset to VK7—we may need some diagnosis, Doc.

4KA still yearns for "Sunny" VK4 and our present weather has not helped matters. He says the life of a Civil Engineer on Survey is N.B.G. in VK7. Afraid he'll sight the South Pole someday.

7LJ is one of the many over-busy ones, but hopes to have more leisure time a little later on. It shouldn't trouble you too much, Lon. Joe is a good horse.

(Continued on Page 20)

VICTORIAN DIVISION

The usual monthly General Meeting of the Victorian Division was held on Tuesday, September 4 and, notwithstanding the wet, cold night, a very good attendance was experienced, some 62 members and visitors being present. An innovation at the meeting was the Attendance Book, which was passed round for all present to sign—those present also identified themselves by calling out their call-signs or names.

Interstate visitors were Alan Joscelyne, VK2AJO, and Dave Laing, a member of the R.A.A.F., from Brisbane. Captain T. O. Cadell, VU2EB, was also present, but more of him later.

Others present were Max Howden, 3BQ, (who occupied the chair in the absence of the President, Harry Kinnear, 3KN); George Manning, 3XJ; Vic Smith, 3UR; John Symons, 3JT; A. H. Bowley, 3AP; L. Harding, 3LX; Ivor Morgan, 3DH; Ed. Marks, 3VM; G. Bollas, 3LA; G. Dennis, 3TF; R. C. Smith, 3YQ; A. C. Zander, 3PG; D. G. Britt, 3HT; Keith Heitsch, 3HK; G. W. Ireland, 3IG; T. Manks. 3TZ; R. McGregor, 3XZ; F. McTaggart, 3NW; F. Rowley, 3QF; M. K. Bunn, 3LF; Herb. Stevens, 3JO; Norm. Foxcroft, 3UQ; I. Sewell, 3IK; C. Holland, 3XC; J. Wall, 3QS; C. S. Harvey, 3UO; A. Matthews, 3ZT; C. M. Barnett, 3VD; J. Wilkinson, 3PQ; Jim Marsland, 3NY; I. Stafford, 3XB; Dick Giddings, 3DG; D. Stalker, 3KJ; S. Zeunert, 3SZ; Fred Smith, 3FR; J. A. Cusick, 3QM; R. Jackson, 3PU; F. W. Bond, 3SQ; Bob Anderson, 3WY; Bert Burdekin, John Scott, D. Couch, G. Jones, L. Sykes, P. Orchard, John Belcher, Jim Kerley, A. Simmons, C. Fraser, M. Hibbert, R. Hunt, J. Mansergh, J. O. Bail, L. Cusick, Ken Ridgway.

The secretary read a letter from the Federal Secretary containing the final plan to be submitted to the P.M.G.'s Department concerning Post War Regulations. It was pointed out that this plan had been arrived at after reference to all the Divisions, and represented the majority decision of the Divisions. Some points were not approved of by everybody, but it was felt that F.H.Q. had done a good job, and it was agreed that F.H.Q. be advised that the Victorian Division approved of the plan as submitted.

Captain Cadell, VU2EB, then produced a Wire Tape Recorder, and gave a demonstration of its capabilities. He had already prepared several recordings, and after these had been played ,a mike was passed around and quite a few of the boys were recorded on the tape. VU2EB is to be congratulated on the show that he was able to put on. A technical description of the recorder apepars elsewhere in this issue.

Arrangements have been made for an interesting lecture at the October meeting. Mr. Howard Love, and engineers from Kingsley Radio, have offreed to give a lecture and demonstration on "Developments in Permatune Tuning."

At Council meeting on September 11, the main item of business was the magazine. At the previous meeting, a new magazine committee was formed, and it had been decided to proceed with the printing of the mag. as soon as practicable. The Committee reported on the position and recommended the printing of the October issue.

Further to the recent arrangement concerning the closing of the main door to the building, it was agreed that the owners of the building be asked for permission to instal an extension to the present door-bell, such bell to be switched over to our rooms on nights when meetings are being held.

The letter from F.H.Q. re Post War Regulations was referred to, and the Secretary was instructed to pass along the motion from the General Meeting approving of the plan.

The possibility of resuming A.O.C.P. Classes was brought up, and it was decided that applications be called for the positions of a Class Manager and Instructors for Morse and Theory. The Manager would be responsible for all publicity in connection with the classes, and would be required to be in attendance two nights each week. Instructors would be required to be in attendance one night each week. Scale of remuneration has not yet been fixed, but anyone interested in any of the positions is asked to communicate with the Secretary.

The Laboratory Committee reported on their activities, and it was decided that a comprehensive report be prepared for publication in the magazine.

Applications for membership continue to pour in and seven new applicants for membership were signed up at the September meeting. Since July 1, the following new members have been admitted: Messrs. J. L. Mansergh, J. L. G. Symons VK3JT, T. V. Sawers VK3OG, L. McIntyre VK3XF, H. M. Finnigan VK3PX, M. A. Rodgers VK3UI, J. Wilkinson VK3PQ, J. O. Bail, P. A. Orchard, A. G. Smith, C. M. Fraser, A. Simmons, L. D. Sykes, R. M. Davis, G. Bollas VK3LA. Membership is now higher than at any time since 1934, prior to which no records are available. Members are asked to bring non-member friends along to a meeting and let them see for themselves the advantages of membership of the W.I.A.

The November meeting has been altered from the Tuesday to the Wednesday night on account of Cup Day holiday. The meeting will therefore be held on WEDNESDAY, NOVEMBER 7th. Don't forget the alteration in the night.

THE LABORATORY COMMITTEE.
IT'S AIMS AND OBJECTS.

The Victorian Division of the W.I.A. has always been proud of its claim to be the possessor of first class laboratory equipment. The fact that it was seldom used, and no determined effort made to set it up in a laboratory, kept up to date by the addition of new equipment as it became available, is a reflection on either the financial policy of the past or lack of interest in such a project, or both.

Amateur Radio has progressed through the years, and the more or less haphazard, cut and try methods of the past have now given way to practices involving the use of accurate measuring equipment of all kinds, much of which is too costly for the average ham to purchase.

One of the first objects of the Laboratory Committee, therefore, is to plan, design, construct and equip with modern and accurate apparatus, a laboratory which can be of assistance to members in their efforts to secure maximum efficiency from their gear, and to test the accuracy of the calibration of their own test equipment. The Committee, in its report to Council in July, 1944, recommended that the apparatus necessary to establish such a laboratory should include the following:—

1. Beat Frequency Oscillator, or other of suitable type, having a range of from 20 to 15000 cycles per second and capable of developing at least two volts across a suitable range of output impedances.
2. Precision Signal Generator, suitable for making accurate tests on communications and ham band receivers.
3. Inductance, Capacity and Resistance Bridge.
4. Vacuum Tube Voltmeters.
5. Cathode Ray Oscilloscope.
6. Heterodyne Frequency Meter.
7. Transmitting and Receiving Tube Testers (Mutual Conductance).

Such measuring or other equipment as may be deemed necessary for future developments.

With a laboratory so equipped, the Committee would be in a position not only to apply many tests to members' own equipment, but also to carry out experiments and tests to determine the behaviour of new circuits, components and practices, and to write up their observations, and the results of such experiments and tests in the form of technical articles for the magazine.

The provision of technical articles for "Amateur Radio" is another important task for the Laboratory Committee, and one which will require continuous attention. The position where the Technical Editor had to set to at the last minute and write a technical article because none had come to hand, should never occur again. By careful planning and selection of subjects and co-ordinating the efforts of contributors, it should be possible to build up a reserve of articles of a standard that reflects the undoubted genius and ability of the Australian Radio Amateur. With the advent of the printed magazine, this task has increased. Although the number of pages devoted to technical articles remains about the same as for the duplicated magazine, about three times as much matter is required to fill them. If it can be arranged, we plan to include as regular features, in addition to the main technical article, a Digest Section, a Beginners' Section, etc., as the space permits.

The success of such a plan depends to a large extent upon the co-operative efforts of many members and volunteers are urgently needed for this work, which must be started immediately if succeeding issues of the magazine are to attain the desired standard. It is suggested that a Sub-Technical Editor be appointed for each section, with as many assistants as practicable, to share the task of supplying technical articles. Volunteers should contact the Technical Editor, Mr. K. Ridgway or Mr. H. N. Stevens. It is also hoped that other Divisions may form similar groups for the express purpose of supplying technical articles.

Both the Book and Instrument Libraries come under the control of the Commitee. New books are to be added to the library at frequent intervals and these, and also meters in the library are available on loan to members. Future requirements of Ham radio may require the extension of the facilities already provided by the Instrument Library. Such equipment as Field Strength Meters, Modulation Depth Indicators, etc., could well be included among the instruments available on loan to members, and the construction and maintenance of these would come within the scope of the Committee.

VK3WI will go on the air again ,and will have to keep pace with modern developments. Construction, operation, alteration and additions to transmitting and receiving equipment will also form a large part of the work of the Committee. Other undertakings include the following:—Assisting to solve problems encountered by members, assistance to non-radio bodies such as, for example, the Ski Club of Victoria, who may require the use of radio for emergency communications, provision of lectures at General Meetings, assistance to and co-operation with, where possible, other research laboratories and the exchange of information and observations on any tests that may be being made.

The first requirement for the achievement of the foregoing is the enlargement of the Committee, the present complement, Messrs. Ridgway, Quin and Stevens, being quite inadequate for the task. Members who are technically inclined will be most welcome to the ranks, but there is also room for the man who is prepared to help the committee in any way and thus, not only being in a position to learn more about experimental radio, but also of being of assistance to your fellow hams.

QUEENSLAND DIVISION

The main obstacle to the full-scale resumption of activity in this Division is the lack of a suitable room for meetings, etc. However, we are making the best use of the only room obtainable, and the present programme consists of a General Meeting once a month, plus a Student's Class once a month. This will, however, be expanded as soon as conditions permit, and should result in a definite increase in hams in this city.

General Meetings are held on the last Friday of each month at the Diggers' Association Rooms, Adelaide Street, Brisbane. Any visiting hams can contact the Secretary by ringing M 2144.

Eighteen hams rolled up at the last General Meeting held on Friday, 31st August, and although the number may not seem large, it was a decent showing, because Brisbane at the time was in the throes of a tram strike. Some half dozen student members were also present.

Office-bearers at present are:—
Chairman: K. Schleicher, 4KS.
Dep. Chairman: F. Nolan, 4JU.
Secretary: H. MacGregor, 4ZU.
Treasurer: R. Campbell, 4RC.
Tech. Adviser: V. Jeffs, 4VJ.
Publicity: N. Roberts.

This committee was elected by a recent meeting and will function until the return of our absent President, VK4AW ,and Treasurer, 4UU. Now for some Personal Notes.

4EN. Got quite a write up in the April QST, so we'd better not forget him in the local magazine. Eric is one of our four members who are conducting the Students' Code Class.

4KS. Keith is reputed to be suffering from itchy trigger—I mean switch finger. Also just finished an fb dual waver for the car.

4FB. Fred still presents himself at meetings complete with the 4FB pipe. Rumour hath it that he is dabbling with acorn tubes in his receiver.

4RF. House hunting is the fascinating pastime that Fred is indulging in at the moment. Actually, we believe that its not the house so much as its land for a beam that he is after.

4JF. Well, Jack, apart from seeing you at meetings, I can't really think of anything to write about. Glad to see your still keen on Ham Radio.

4RC. Bob is interested in an acorn converter and also, of course, he is our all important treasurer.

4JU. Morse tuition should yield good results in our Student's Class, if Frank's efforts yield the results they deserve.

4ES. Herb. is a busy man these days with his duties at the Police Radio. Has a very nice receiver at home, I believe.

4HM. Now a resident of Brisbane, late of Pomona. Another Morse instructor.

4HU. Still wearing khaki. Future interests include high power high fidelity phone.

4FL., 4FY and 4DM. A trio at the last meeting who defied the tram strike.

4IR. A keen member, who has unbounded enthusiasm and plenty of ideas for the future of Ham Radio.

4VJ. Professional Radio is Vince's livelihood. Will be asking you for a lecture or two soon, Vince.

4ZU. In Norm. Robert's temporary absence, I've compiled this list of dope, so I guess that lets me out. Don't forget, contact me at M 2144 if you're in town and want to meet some of the gang.

QUEENSLAND DIVISION

Chairman : K. SCHLEISCHER, VK4KS.
Deputy Chairman : F. NOLAN, VK4JU.
Secretary : H. MacGREGOR, VK4ZU.
Treasurer : R. CAMPBELL, VK4RC.
Technical Advisor : V. JEFFS, VK4VJ.
Publicity : N. ROBERTS.
Meeting Place—Diggers' Association Rooms, Adelaide Street, Brisbane.
Meeting Night—Last Friday of each month.
Secretary's Address—"Mouquet," Eildon Road, Windsor, N.3. Phone: M 2144.

SOUTH AUSTRALIAN DIVISION

Since the reforming of the Institute in this State, we have to report that results have been very encouraging, both in the number of old and new hams who have joined, and those who have signified their intention of becoming members, and with this in view, it should be no time before the Institute is on a firm footing.

The incoming council elected at the first general meeting held at 17 Waymouth Street ,on August 14, are Ivor Thomas, President, Joe Kilgariff, Vice-President, Doc. Barbier, Hon. Secretary, Cec. Baseby, Treasurer, George Luxon, Programme Organiser, Joe McAllister, Membership Organiser, Pete Bowman, Publicity.

All are very enthusiastic in their various jobs and looking forward to seeing the Institute back bigger and better than it was pre-war, and are sparing no effort to that end.

The second General Meeting took the form of an inspection of the R.A.A.F. training school, and was well attended. Some splendid equipment was on display, and plenty of good ideas were obtained for post-war rigs.

At the conclusion of the meeting, Mr. McGrath thanked Mr. Gill who was responsible for the arrangements which led up to the inspection. Council meetings are being held bi-weekly until such time as we are re-established on the air, and the preliminary work can be considered done.

A room has been booked at 17 Waymouth Street for the second Tuesday in each month, and meetings have been arranged for these nights when an attractive lecture will be delivered on a topical sucject.

The first of these lectures was given by Mr. Decure at our first general meeting, the subject being picturegram transmissions and their relations to present day radio practices.

For the October meeting to be held on Tuesday the 9th, Mr. Cox, of the School of Mines, will talk on push-pull amplification, which will be illustrated with various apparatus, and as Mr. Cox is an acknowledged authority on this subject, he should have some enlightening information for us.

A.O.P.C. classes are to be formed, and following announcements to this effect in the local papers and air time kindly donated by station 5KA, a large number of students signified their eagerness to take advantage of this service.

Mr. Roy Buckerfield, who has had a great deal of experience in tuition of this type, has agreed to conduct the classes ,and we are indeed fortunate to have been able to engage him for these duties.

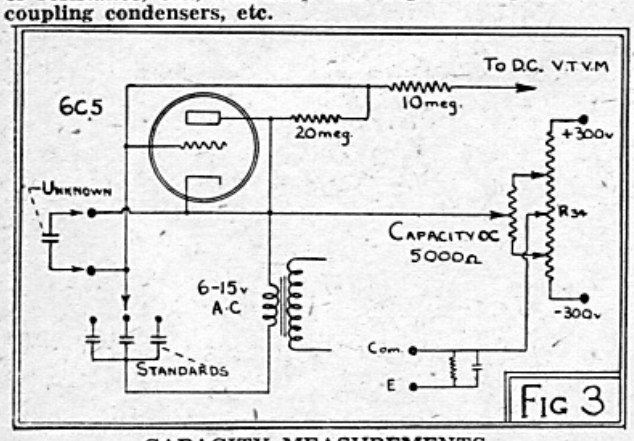
On resumption of active life, an effort was made to obtain our old Post Office box number, but we were unable to do this, but we obtained another, which, if nothing else, is easier to remember, 1234K, and all information concerning Institute activities can be supplied at this address.

A COMBINATION INSTRUMENT

(Continued from Page 4)

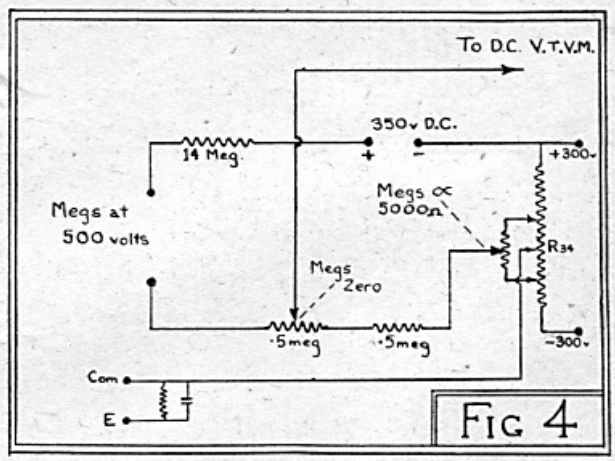
counter bias for the ohmmeter circuit was used to set the hand to infinity with the hands apart. You can't get a shock through 15 megohms. I found that in measuring large capacities it took a long while for the condenser to charge through the 15 megohms, so I added a terminal so that condensers could be quickly charged directly, and then tested. This test is so good for condensers that I don't know where to draw the line between good and bad, as even the best do not test perfect. Naturally the reading would depend on the size of the condenser; a large value would show higher leakage than a small one of the same quality.

I test a batch all the same capacity, throw out the duds, put the better leaky ones aside for bypassing low values of resistance, etc., and keep the high testing ones for coupling condensers, etc.



CAPACITY MEASUREMENTS.

Finally, I decided to make the gadget read microfarads, micro-microfarads, etc., direct on the ohms scale of the meter. The principle under which I finally got the thing to work was this:—If, say, 10 volts AC is applied across two condensers in series, the voltage across the unknown is measured ,the value of the known bears a decimal relationship to the centre of the scale, and the meter



reads 10 volts full scale, then, the capacitance will be read direct off the scale. If the unknown equals the known, then the meter will read half scale. If the unknown is infinitely greater than the known, then there will be practically no voltage developed across it, therefore the meter will read infinity ohms. If the unknown is extremely small as compared with the known, practically all the voltage will be developed across it and the hand will point to zero resistance.

With the prods shorted, the voltage divider potentiometer is adjusted for infiinity capacity, and with the prods open, the resistor in series with the meter is adjusted for zero capacity. The ranges I used had a centre scale value of 0.00015, 0.0015, 0.015, 0.05 and 1.5 microfarads.

The two lower ranges are inaccurate for two reasons, one being due to stray capacities of leads, test prods, etc., and the other due to the impedence of the 10 megohm resistor (due to the AC measuring voltage), which causes appreciable error on low ranges. However, they are useful for comparisons. I should point out here that this error could be eliminated where the mains are frequency controlled ,the unknown capacities could be balanced against non-inductive resistances which equalled the values of the impedances of the required standard con-

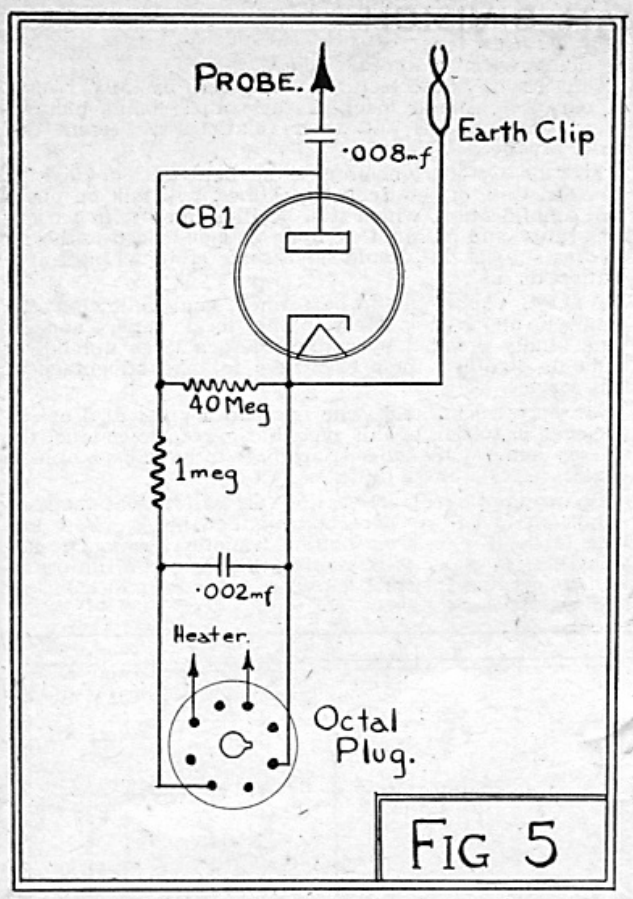


FIG 5

densers, at the particular mains frequency. In my case, the AC comes from a rotary converter, driven from a 32 volt farm lighting plant, so the frequency is an ever variable quantity.

In conclusion, I might pass on a few constructive points. In my own case I used elaborate switching and a number of potentiometers so that each section is normally in adjustment for rapid measurements. However, considerable cost and space can be effected by using one potentiometer on the voltage divider to adjust Capacity Maximum, Megger and Ohms Infinity and AC Zero. Also one resistor could be used for ohms and capacity zero. I found that HT ignition cable was necessary for prod leads on the megohm ranges. The Instrument takes about five minutes to settle down, but is quite stable after this period.

MORSE KEYS.

(Continued from Page 15)

is advisable to lightly lubricate the cones with a little vaseline.

A Masonite or wooden base may be fitted to this key, but it does not need to be over half an inch thick. Thanks to the fact that this key was copied from a manufactured article there should be no complaints from the brethren about bad design or anything in that line.

WESTERN AUST. DIVISION

Postal Address : BOX N1002, G.P.O. PERTH.

Secretary : C. QUIN, VK6CX.

TASMANIAN DIVISION

(Continued from Page 16)

7ML after his hectic experiences on active service is a much improved man these days, and he should be 100% by the time CQ is again heard.

7PA was very pleased with the first postwar meeting, and welcomes the respite he has been given after seeing the war years through for this Division. He trusts his successor won't find it quite so arduous from now on. Good luck, Lon.

Not much is known of the Northern Gang as yet, and like the rest, many of them are still in the services somewhere or other, and time only can rectify this situation. Maybe we will eventually procure a record of each one of them as they return.

Any news is welcome for this column, and many "whispers" will be gratefully received. What have you?

TASMANIAN DIVISION

President : L. R. JENSEN, VK7LJ
Secretary : J. BROWN, VK7BJ.
Treasurer : A. E. FINCH, VK7CJ
Councillors : K. M. KELLY, ex-VK3LL; A. E. ALLEN, VK7PA; M. L. LOVELESS, VK7ML; C. A. WALCH, VK7CW.

Meeting Night—First Wednesday of each month.
Secretary's Address—12 Thirza Street, Newtown.

STH. AUSTRALIAN DIVISION

Box 1234 K, G.P.O., Adelaide.

President : I. THOMAS, VK5IT.
Vice-President : J. KILGARIFF.
Secretary : E. A. BARBIER, VK5MD.
Treasurer : C. BASEBY.
Programme Organiser : G. LUXTON.
Membership Organiser : J. McALLISTER.
Publicity : P. BOWMAN.

Meeting Place—17 Waymouth Street, Adelaide.
Meeting Night—Second Tuesday of each month.

VICTORIAN DIVISION

191 QUEEN STREET, MELBOURNE

Postal Address : Box 2611W, G.P.O.

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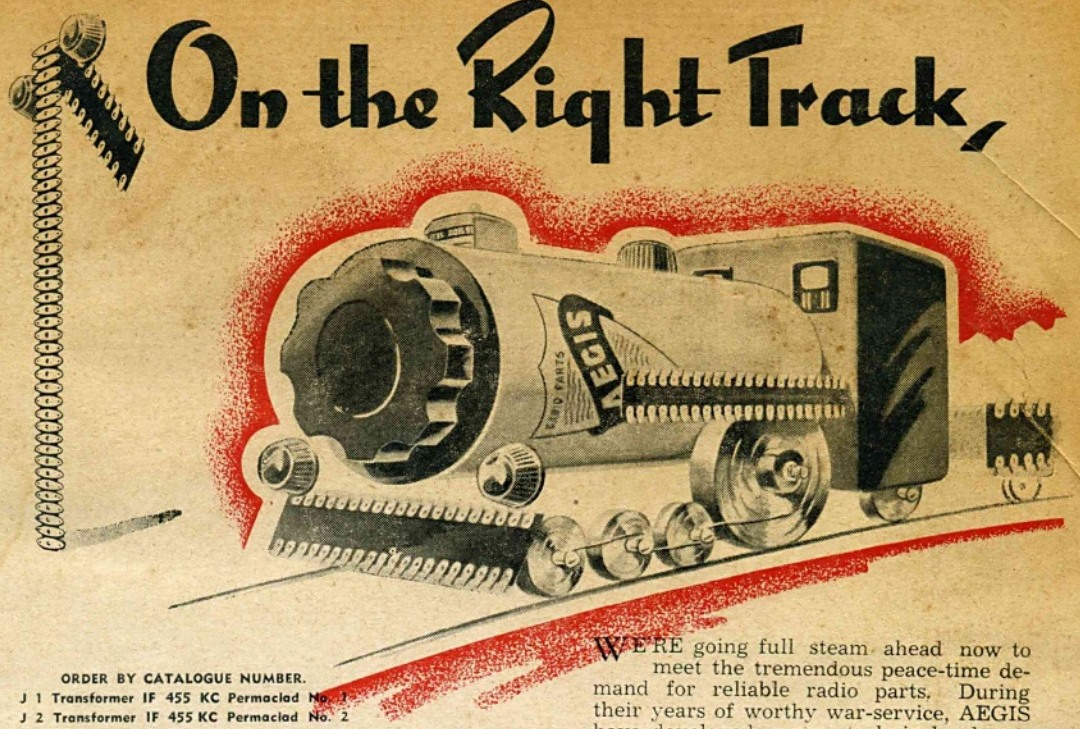

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